

**CLAIMS**

1. Dielectric cellular electret film, said cellular film containing flat gas bubbles, wherein the film contains partial discharges inside the film produced in the gas bubbles to achieve improved electrical properties.  
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2. Dielectric cellular electret film according to claim 1, wherein the film has partial discharges produced in the gas bubbles and the charges are caused to move into the dielectric material of the film as a result of that the film is provided with a large internal unipolar charge created by charging the film by means of an electric DC field intensive enough to produce partial discharges in the gas bubbles and to cause the charges to move into the dielectric material of the film.  
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3. Dielectric cellular electret film according to claim 1, wherein the film is a swelled dielectric cellular electret film.  
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4. Dielectric cellular electret film according to claim 1, wherein the film has at least one film layer foamed to be of full-cell type, and wherein the film has been oriented by stretching it in two directions.  
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5. Dielectric cellular electret film, said cellular film containing flat gas bubbles, wherein the film is a swelled dielectric cellular electret film; wherein the film has at least one film layer foamed to be of full-cell type, wherein the film has been oriented by stretching it in two directions, and wherein the film contains partial discharges inside the film produced in the gas bubbles to achieve improved electrical properties.  
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6. Transducer element having one or several dielectric cellular electret films, said cellular films containing flat gas bubbles, wherein the film contains partial discharges inside the film produced in the gas bubbles to achieve improved electrical properties.  
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7. Transducer element according to claim 6, wherein the film has partial discharges produced in the gas bubbles and the charges are caused to move into the dielectric material of the film as a result of that the film is provided with a large internal unipolar charge created by charging the film by means of an  
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electric DC field intensive enough to produce partial discharges in the gas bubbles and to cause the charges to move into the dielectric material of the film.

8. Transducer element according to claim 6 consisting of at least one cellular  
5 electret film, at least one signal electrode and at least two ground electrodes,  
wherein

the transducer element is a electret film, containing a permanent electric charge,

10 the film being a cell-type electret film, and

15 the transducer part has a laminated structure, where at least the signal electrode is a film-like layer being disposed on the surface of the electret film or another dielectric film.

20 9. Transducer element according to claim 8 wherein the transducer has a unitary laminated structure, where the signal and ground electrodes have been disposed on the surface of the dielectric films and continue unitary from the transducer part as a connection element part, whereby the electrodes extend from the transducer part as connection element part for connecting the transducer to a signal processing device.

25 10. Transducer element according to claim 8, wherein the element has at least two transducer film elements, at least one of the elements having different electric charges on their surfaces.

30 11. Self-adhesive film self-adhesive by virtue of an electrostatic force consisting of a dielectric cellular electret film, said cellular films containing flat gas bubbles, wherein the film contains partial discharges inside the film produced in the gas bubbles to achieve improved adhesive properties.

35 12. Self-adhesive film according to claim 11, wherein the film has partial discharges produced in the gas bubbles and the charges are caused to move into the dielectric material of the film as a result of that the film is provided with a large internal unipolar charge created by charging the film by means of an

electric DC field intensive enough to produce partial discharges in the gas bubbles and to cause the charges to move into the dielectric material of the film.

13. Film of dielectric material, self-adhesive by virtue of an electrostatic force,  
5 which film contains gas bubbles preferably of a flat shape, characterized in that, to achieve an adhesive quality of the film, the film is given a large internal unipolar charge, which is created by charging the film by means of an electric field intensive enough to produce partial discharges in the gas bubbles and to cause the charges to move into the dielectric material of the film.

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14. Film as defined in claim 13, wherein the film is coated with a slightly adhesive, sticker-like layer.

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15. Film as defined in claim 13, wherein, to adjust the adhesion of the film, one or both of its surfaces are subjected to an AC corona treatment before charging.

16. Film as defined in claim 13, wherein, to increase the net charge created inside the film, the film is doped with charge binding additives, such as ferrochloride.

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17. Film as defined in claim 13, wherein certain areas of the film contain a positive charge while the other areas have a negative charge.

18. Procedure for manufacturing cellular dielectric electret film containing flat gas bubbles, characterized in that, to achieve an improved quality of the film, the film  
25 is charged by means of an electric field intensive enough to produce partial discharges in the gas bubbles and to cause the charges to move into the dielectric material of the film, creating a large unipolar charge inside the film.

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19. Procedure as defined in claim 18, wherein the film is subjected to an AC corona treatment before charging.

20. Procedure as defined in claim 18, wherein the adhesion of the film is adjusted by adjusting the intensity of the AC corona treatment or the charging or both.

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21. Procedure as defined in claim 16, wherein the intensity of the charging electric field is over 100 MV/m, and preferably in the range of 100-200 MV/m.